



**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR  
ANANTAPUR – 515 002**

**Advt.No.JNTUA/DA/M.Sc. Courses/2011**

**Dt.02.05.2011**

**ADMISSION TO FULL TIME M.Sc. PROGRAMMES 2011-12**

Applications are invited from eligible candidates for admission into **Full Time Post Graduate** Programmes of **JNTUA, Anantapur** for the academic year 2011-2012. Admissions will be made on the basis of performance in the entrance test to be conducted by the J.N.T. University Anantapur, Anantapur. Application form, the details of the courses and other information can be downloaded from the website [www.jntuanantapur.org](http://www.jntuanantapur.org). The application along with all necessary enclosures with a Demand Draft for **Rs.1000/-** ( **Rs.250/-** in case of SC/ST candidates) drawn on any Nationalized Bank in favour of **The Registrar, JNTUA , Anantapur** payable at **SBI, JNTUEC Branch, JNTUA Campus, Anantapur (Code:2723)**, should reach **The Director i/c, Admissions, JNTUA, Anantapur 515 002** on or before **23.05.2011(Monday)** by **4.00pm**.

**Sd/- REGISTRAR i/c**



10. Nationality & Religion :

11. Do you belong to Andhra Pradesh: Yes / No

If no, mention the State to which you belong:

Place of Birth:

	Village	Mandal	District	State
i) Candidate				
ii) Father / Mother				

12. Particulars of Parent/Guardian  
(Guardian only if parent is not alive)

- a. Name :
- b. Relationship with the candidate :
- c. Profession and designation:
- d. Annual income from all sources :  
(Enclose attested copy of the Latest Income Certificate from the Employer /M.R.O.)

13. Particulars of qualifying Examination:

Name of the Qualifying Examination	Name of the University	Month & Year of Passing	Total Marks Obtained In the qualifying examination with Percentage

**DECLARATION BY THE APPLICANT**

I declare that all the statements made in this application are true. I understand that if any information furnished in this application is found incorrect on scrutiny, the application is liable for rejection and admission, if granted on the basis of such incorrect information, will stand cancelled.

I declare that I have not joined in any course and I will not join any course of study of any University/Institute during the period of my study in this University if I get admission and I will abide by the rules and regulations of this University.

Signature of the Candidate

Date:

Place:

Note:

1. Incomplete applications will be summarily rejected. No correspondence in this regard will be entertained.
2. Fee paid will not be refunded under any circumstances.
3. University will not be responsible for any postal delay/loss in transit.

ADDRESS SLIP
Name :

ADDRESS SLIP
Name :

ADDRESS SLIP
Name :

ADDRESS SLIP
Name :

ADDRESS SLIP
Name :

ORIGINAL

**HALL TICKET**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR, ANANTAPUR**

**ENTRANCE TEST FOR ADMISSION TO  
Full Time M.Sc. Programmes 2011**

Specialization in which admission is sought:

Hall Ticket No:

Centre of Examination:

**DATE OF EXAMINATION:**

**TIME:**

(To be filled in by the Candidate)

Name of the Candidate \_\_\_\_\_

Father's /Husband's Name \_\_\_\_\_

Identification Marks : (1) \_\_\_\_\_

(2) \_\_\_\_\_

Affix recent passport  
size  
Photograph duly  
attested  
by  
Gazetted Officer with  
official seal

Signature of Candidate

DIRECTOR i/c, Admissions  
JNTUA, ANANTAPUR.

**DUPLICATE**

**HALL TICKET**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR, AP**

**ENTRANCE TEST FOR ADMISSION TO  
Full Time M.Sc. Programmes 2011**

Specialization in which admission is sought:

Hall Ticket No:

Centre of Examination:

**DATE OF EXAMINATION:**

**TIME:**

(To be filled in by the Candidate)

Name of the Candidate \_\_\_\_\_

Father's /Husband's Name \_\_\_\_\_

Identification Marks : (1) \_\_\_\_\_

(2) \_\_\_\_\_

Affix recent passport  
size  
Photograph duly  
attested  
by  
Gazetted Officer with  
Official seal

Signature of Candidate

DIRECTOR i/c, Admissions  
JNTUA, ANANTAPUR.

**INSTRUCTIONS TO THE CANDIDATES APPEARING FOR THE ENTRANCE EXAMINATION:**

1. Candidates will not be admitted after the commencement of the examination and are not allowed to leave the hall until the end of the examination.
2. The Hall Ticket shall be produced at the time of examination, failing which the candidate will not be allowed to write the examination.
3. Answers must be written in black/blue ink.
4. THE HALL TICKET SHALL BE PRESERVED TILL THE TIME OF ADMISSION and shall be produced at the time of admission.
5. No travelling expenses will be paid for journey undertaken for appearing for the Entrance Examination/Counseling.
6. Adoption of any kind of unfair means or malpractice at the time of examination will render the applicant liable for cancellation of his/her performance in the examination. Decision of the the Chief Superintendent of the Examination Centre shall be final in all these matters.
7. Issue of Hall Ticket and appearance at the Entrance Examination does not automatically entitle a candidate for admission.
8. Mathematical Tables, Calculators, Pagers, Mobile Phones and any other electronic gadgets will not be allowed into the Examination Hall.

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR  
ANANTAPUR 515 002**

**ADMISSION TO FULL TIME M.Sc. PROGRAMMES 2011-2012**

**INFORMATION TO THE CANDIDATES**

- a) **DETAILS OF COURSES** : Applications are invited for admission to the following Post Graduate Programmes of JNTUA, Anantapur for the academic year **2011-2012**. The details of the courses and the eligibility criteria are given below:

**I. COURSES OFFERED BY JNTUA OIL TECHNOLOGICAL RESEARCH INSTITUTE, ANANTAPUR**

<b>S.No.</b>	<b>Name of the Course</b>	<b>Eligibility Criteria</b>	<b>Intake</b>
1.	<b>M.Sc. Food Technology</b>	B.Sc., Food Technology / B.Tech. Food Technology / Food Science and Technology / Dairy Technology / B.Sc., with Chemistry, under part of two with any two of the following – Food Science, Botany, Zoology, Physics, Geology, Biochemistry, Microbiology, Biotechnology, Sericulture, Instrumentation, Industrial Chemistry, Medical Lab. Technology, Polymer Technology, Home Science / B.Sc. Mathematics, Statistics or its equivalent with Chemistry as one of the subjects	25
2.	<b>M.Sc. Organic Chemistry</b>	B.Sc. Degree with Chemistry or Industrial Chemistry or its equivalent	25
3.	<b>M.Sc. Biochemistry</b>	B.Sc. Degree with at least one life science subject*	25
4.	<b>M.Sc. Microbiology</b>	B.Sc. Degree with at least one life science subject*	25
5.	<b>M.Sc. Bio-Technology</b>	B.Sc. Degree with Biotechnology or with at least one life science subject*	25

\* Life science subjects are Botany / Zoology / Bio Chemistry / Micro Biology / Biotechnology / Bio Physics / Food Science / Science / Seri Culture / Horticulture / Environmental Sciences / Genetics.

**II. COURSES OFFERED BY JNTUA COLLEGE OF ENGINEERING, ANANTAPUR**

S.No.	Name of the Course	Eligibility Criteria	Intake
1.	<b>M.Sc. Mathematics with Computer Science</b>	B.Sc./B.A./or equivalent with Mathematics as one of the optional subjects	25
2.	<b>M.Sc. Industrial Mathematics</b>	B.Sc./B.A./or equivalent with Mathematics as one of the optional subjects	25

**III. COURSES OFFERED BY ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCE, RAJAMPET**

S.No.	Name of the Course	Eligibility Criteria	Intake
1.	<b>M.Sc. Physics</b>	B.Sc. Degree with Physics as one of the Optional subjects or its equivalent	30
2.	<b>M.Sc. Organic Chemistry</b>	B.Sc. Degree with Chemistry or Industrial Chemistry or its equivalent	30

b) Candidates with requisite qualifications are only eligible to apply. Applications received in response to these notifications in the prescribed format will only be considered. No other request for admission will be entertained.

c) **Separate application must be submitted for each specialization.**

d) **LOCAL AREA RESERVATION:**

In each course 85% seats are reserved for SVU Local candidates. For the remaining 15% seats, all the candidates can compete and these seats will be filled based on the merit.

e) **FEE STRUCTURE :**

- i) Tuition fee for M.Sc., programme is Rs.15,000/- per semester payable in the form of Demand Draft in favour of the Registrar, JNTUA, Anantapur, payable at SBI,JNTUEC Branch, Anantapur (Code:2723).
- ii) Miscellaneous fees to be paid at the time of admission will be around Rs.5150/- (Rupees Five Thousand One Hundred and Fifty only).

f) **APPLICATIONS SHOULD BE ACCOMPANIED BY THE FOLLOWING:**

- i) A Demand Draft for Rs.1000/- (**Rs.250/- in case of SC/ST candidates**) drawn on any nationalized Bank in favour of Registrar, JNTUA, Anantapur, payable at SBI,JNTUEC Branch Anantapur (**Code:2723**).

- ii) In case of SC/ST candidates applying with a DD of Rs. 250/- , a valid Income Certificate of the Parent must be enclosed
- iii) Attested copy of Degree Certificate /Provisional Certificate of qualifying Examination
- iv) Attested copies of all Marks Memos pertaining to the qualifying Examination
- v) Attested copy of Date of Birth Certificate
- vi) Attested copies of all Study Certificates from IX Class to the qualifying Degree
- vii) Attested copy of Transfer Certificate from the Institution in which the candidate has last studied
- viii) Attested Copy of Migration Certificate from the University in which the candidate has last studied
- ix) Attested Copy of Integrated Permanent Community Certificate in case of SC/ST/BC in the prescribed proforma
- x) Three self addressed envelopes of 25x10 cms. Size duly, stamped (affixing Rs.5.00 stamps)
- xi) Attested copy of relevant certificate in case of Physically Handicapped

**Note: The Originals of all the attested copies of Certificates enclosed are to be produced at the time of admission without fail.**

- g) **The University will run a particular course only if 75% of the seats in that course are filled up.**
- h) The University reserves the right to offer or cancel a particular specialization depending upon the number of applicants.
- i) Registration fee will not be refunded under any circumstances.
- j) The University reserves the right to make alterations in the intake and rules for admission.
- k) If it is detected that a candidate has been admitted due to any mistake made inadvertently in the processing of applications and during the admission stage, the University reserves the right to cancel the seat at any stage.
- l) Admission will be closed within two weeks of the commencement of the first semester class work irrespective of the vacancies.
- m) If any dispute concerning admissions in the courses of JNTUA arises, the jurisdiction shall remain with the Courts in Anantapur only.
- n) **ENTRANCE EXAMINATION SCHEDULE:**  
Entrance examination to any course will be conducted only if the number of eligible candidates who have applied for that course is more than the number of seats available in that course. In case, if the entrance examination is necessary, the entrance examination will be for one hour duration with 60 multiple choice questions. The candidates will be given ranks based on the marks obtained in the entrance examination and the ranks will be displayed in the JNTUA web site. The date of counseling and admission will be intimated to the eligible candidates and will also be displayed in the JNTUA web site.

SL.NO	SPECIALIZATION	DATE OF EXAMINATION	TIME OF EXAMINATION
1	FOOD TECHNOLOGY	18.06.2011	9.00 AM to 10.00 AM
2	BIOCHEMISTRY	18.06.2011	11.00 AM to 12.00 NOON
3	MICROBIOLOGY		
4	BIOTECHNOLOGY		
5	ORGANIC CHEMISTRY	18.06.2011	1.00 PM to 2.00 PM
7	MATHEMATICS WITH COMPUTER SCIENCE	18.06.2011	3.00 PM to 4.00 PM
8	INDUSTRIAL MATHEMATICS		
9	PHYSICS	18.06.2011	5.00 PM to 6.00 PM

**Note:** The list of candidates eligible to appear for the entrance test will be displayed in the web site and the candidates have to collect the Hall Tickets one day prior to the entrance test from the Office of the Director i/c, Admissions between 10.00 am to 5.00 pm, if the Hall tickets are not received by Post.

**o) GENERAL:**

Application complete in all respects (in A4 size) accompanied with a Demand Draft for the required amount drawn in favor of “**THE REGISTRAR, JNTUA, ANANTAPUR**” payable at SBI, JNTUEC Branch, JNTUA Campus, Anantapur (Code:2723) is to be submitted to **Director i/c, Admissions, JNT University Anantapur, Anantapur 515 002**” either in person or by Registered post /Courier on or before **23.05.2011 (Monday) by 4.00.P.M.**

The University is not responsible for any delay or loss of application in transit. Incomplete applications or applications received after the last date will not be considered and fee paid will not be refunded.

**Registrar i/c**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY ANANTAPUR**  
**ANANTAPUR 515 002**

**ADMISSION TO FULL TIME M.Sc., PROGRAMMES 2011-2012**

**SYLLABUS FOR ENTRANCE EXAMINATION FOR  
BIO-CHEMISTRY/MICROBIOLOGY/BIO-TECHNOLOGY  
(Common for the three courses)**

**Fundamental Chemistry**

1. Structure and reactivity of organic compounds: Introduction, hybridization, types of fissions, Types of reagents, Polarization effects and Types of reactions.
2. Classification and nomenclature of organic compounds.
3. Thermodynamics: Introduction, Laws of thermodynamics
4. Chemical Kinetics: Introduction, Rate of reaction, order of reaction (zero, first, second), molecularity and pseudo reactions.

**Biochemistry , Microbiology & Biotechnology**

5. Water as biological solvent, pH, cell and cell organelles.
6. Biomolecules – Classification, structure, function, physical and chemical properties of carbohydrates, lipids, amino acids, proteins, and nucleic acids.
7. Metabolism – Catabolic and anabolic reactions of carbohydrate metabolism, lipid metabolism, amino acid metabolism and nucleic acid metabolism.
8. Physiology – Digestive, respiratory, circulatory, excretory system, muscle contraction and nervous system.
9. Immunology – Types of immune system, lymphoid organs, lymphoid cells, antigen, types of antigens, antibody and types of antibodies.
10. Molecular biology – DNA as genetic element, mechanism of replication, transcription, translation, gene expression and r DNA technology.
11. History of microbiology and classification of microbes.
12. Microbiological methods – isolation, maintenance, preservation and microscopy.
13. Bacteria – Structure, reproduction, recombination, nutrition, bacterial growth, cultures. Structure, morphology, reproduction of fungi, algae, protozoa. Control of microbes and antibiotics.
14. Microbial genetics – mutations, bacterial transformation, conjugation, transduction, transfection, recombination and plasmids.
15. Viruses – Plant, animal, bacterial viruses, HIV and oncogenic viruses.

# SYLLABUS FOR ENTRANCE EXAMINATION FOR ORGANIC CHEMISTRY

## INORGANIC CHEMISTRY

1. Atomic Structure
2. Block elements: s,p,d, f block elements, introduction, physical and chemical properties.
3. Nuclear Chemistry : Introduction, nuclear reactions, fission, fusion, carbon dating, and industrial applications.
4. Co-ordination compounds: Introduction, nomenclature, Crystal field theory, and Werners theory.

## PHYSICAL CHEMISTRY

5. Solutions: Introduction, types of solutions, colligative properties – lowering of vapour pressure, osmotic pressure, elevation of boiling point, depression of freezing point and Van't Hoff's factor.
6. Adsorption: Introduction, types of adsorption, properties, and influencing factors.
7. Colloids: Introduction, types of colloids, preparation, properties, application of colloids, Emulsions and Gels.
8. Thermodynamics: Introduction, Laws of thermodynamics.
9. Electro chemistry: Introduction, Ohm's law, conductivity, Transport number, theories of indicators, Buffer solutions and Standard electrodes.
10. Chemical kinetics: Introduction, rate of reaction, order of reaction (zero, first, second) molecularity and pseudo reactions.

## ORGANIC CHEMISTRY

11. Structure and reactivity of organic compounds: Introduction, hybridization, types of fissions, types of reagents, polarization effects and types of reactions.
12. Classification and nomenclature of organic compounds.
13. Preparation and chemical properties of cycloalkanes and heterocyclic compounds (Furan, Thiophene and pyrrole).
14. Preparation and chemical properties of active methylene group compounds.
15. Preparation and chemical properties of various functional groups containing organic compounds (Halogen, Hydroxy, carbonyl, Nitrogen compounds).
16. Carbohydrates, Aminoacids Proteins, Alkaloids and Terpenoids.
17. Stereochemistry
18. Introduction to Spectroscopy.

## **SYLLABUS FOR ENTRANCE EXAMINATION FOR FOOD TECHNOLOGY**

1. Chemical bonding
2. Co-ordination compounds – Introduction, Crystal field theory, nomenclature and Werner's theory.
3. Phase rule: Introduction, terms, phase diagram and detailed application to water.
4. Adsorption: Introduction, Types of adsorption and factors affecting adsorption
5. Solutions: Introduction, Types, Colligative properties, Lowering of Vapour pressure, Osmotic pressure, Elevation of boiling point, Depression freezing point and Van'thoff factor.
6. Thermodynamics: Introduction, Laws of thermodynamics
7. Electro chemistry: Introduction, Conductors, Electrolysis, Ohms and Faradays laws of electrolysis, theories of ionization and ionic equilibrium.
8. Chemical Kinetics: Introduction, Rate of reaction, order of reaction - Pseudo order, Zero, First and Second.
9. Errors : Introduction, types of errors
10. Structure and reactivity of organic compounds: Introduction, hybridization, types of fissions, Types of reagents, Polarization effects, Types of reactions.
11. Classification and nomenclature of organic compounds
12. Preparation, properties, and uses of alkanes, alkenes, alkynes, and aromatic compounds and heterocyclic compounds.
13. Preparation, properties and uses of various functional groups: Alkyl halides, alcohols, ethers, carboxylic acids, esters, Nitrogen compounds, Active methylene group compounds.
14. Stereo chemistry and spectroscopy of organic compounds.
15. Carbohydrates, oils and fats, amino acids and proteins, dyes, alkaloids and terpens.

**SYLLABUS FOR ENTRANCE EXAMINATION FOR  
MATHEMATICS WITH COMPUTER SCIENCE/INDUSTRIAL  
MATHEMATICS  
(Common for both Specializations)**

**1. DIFFERENTIAL EQUATIONS:**

- Differential equations of first order and first degree
- Differential equations of the first order but not of the first degree
- Higher order linear differential equations
- System of linear differential equations

**2. SOLID GEOMETRY:**

- The Plane
- The Line
- The Sphere
- Cones, Cylinders, Conicoids

**3. REAL ANALYSIS:**

- The Real Numbers
- Sequences and Series
- Limits
- Continuous Functions
- Differentiation
- Riemann Integral

**4. RINGS AND LINEAR ALGEBRA:**

- Rings
- Integral Domains
- Some Non-Commutative examples
- Homomorphisms of Rings
- Rings of Polynomials
- Factorization of Polynomials over a Field
- Vector Spaces
- Linear Transformation and Matrices

**5. ALGEBRAIC EQUATIONS:**

- System of Linear Equations
- Determinants
- Diagonalization
- Inner Product Spaces

**6. LINEAR PROGRAMMING:**

- Introduction to Linear programming
- The Simplex Method

**7. NUMERICAL METHODS:**

- Theory of Equations
- Solution to Numerical, Algebraic and Transcendental Equations
- Simultaneous Linear Algebraic Equations
- Finite differences
- Interpolation

## M.Sc.(PHYSICS) ENTRANCE SYLLABUS

### UNIT-1

**Vector Analysis:** Gradient of a scalar field and its physical significance .Divergence and curl of a vector field. Vector integration-Line, surface and volume integrals. Stokes, Gauss and Green's theorems, **Mechanics of particles & rigid bodies:** Laws of motion, Motion of variable mass system, Conservation of energy and momentum. Collisions in two and three dimensions concept of impact parameter, scattering cross - section Rutherford's scattering, Definition of Rigid body-rotational kinematics relations, equation of motion for a rotating body, angular momentum and inertial tensor. Euler's equation, precession of a top.**Central forces:** Central forces-definition and examples, Conservative nature of central forces, Equation of motion under a central force, Gravitational field, motion under inverse square law, derivation of Kepler's laws.

**Special theory of relativity:** Galilean relativity, absolute frames, Michelson-Morley experiment, postulates of special theory of relativity, Lorentz transformation, time dilation, length contraction, mass and energy relation.

### UNIT-2

**Fundamentals of vibrations:** Simple harmonic oscillator and solution of the differential equation physical characteristics of SHM, frequency of loaded spring taking its mass into consideration, combination of two mutually perpendicular simple harmonic vibrations of same frequency and different frequencies, Lissajou's figures.**Damped and forced oscillations:** Damped harmonic oscillator, solution of the differential equation of damped oscillator. Energy considerations, comparison with undamped harmonic oscillator, logarithmic decrement, relaxation time, quality factor, amplitude resonance, velocity resonance.**Vibrating strings:** Transverse wave propagation along a stretched string, general solution of wave equation and its significance, modes of vibration of stretched string clamped at both the ends, overtones, energy transport, and transverse impedance.**Ultrasonics:** Ultrasonics, properties of ultrasonic, production of ultrasonics by piezoelectric and magnetostriction methods, detection, applications.

### UNIT-3

#### Thermodynamics and Optics

**Thermodynamics:** First law of thermodynamics-significance and applications of first law of thermodynamics-Reversible and irreversible process-Carnot's theorem-Carnot's engine, Clausius-Clapeyron equation-Second law of thermodynamics,Thermodynamic scale of temperature-Entropy concept-Entropy and disorder measurement of entropy changes in reversible and irreversible processes -Entropy-Temperature diagrams.

**Thermodynamic potentials and Maxwell's equations:** Thermodynamic potentials-Derivation of Maxwell's thermodynamic relations-specific heats-Derivations for ratio and difference of two specific heats-Joule-Kelvin effect **Quantum theory of radiation:** Black body-Planck's black body-distribution of energy in the spectrum of a black body-Wien's displacement law. Wien's law, Rayleigh-Jeans law-quantum theory of radiation-Planck's law- Measurement of radiation. **Statistical thermodynamics:** Introduction to statistical mechanics Statistical equilibrium-probability theorems in statistical thermodynamics - Boltzmann distribution law

### UNIT-4

**Interference:** The superposition principle-coherence-Fresnel's biprism-determination of wavelength of light. Change of phase on reflection-determination of thickness of a transparent material using prism. oblique incidence of a plane wave on a thin film (the

cosine law)-colours of thin films -Interference by film with two non parallel reflecting surfaces (wedge shaped film)-determination of diameter of wire, Newton's rings in reflected and transmitted light.**Diffraction:** Fraunhofer diffraction-diffraction due to a single slit and circular aperture. Fraunhofer diffraction pattern with N-slits-The diffraction grating Determination of wavelength of light. **Polarization and double refraction:** Polarized light-Brewster's law-Malus Law-phenomenon of double refraction in calcite - Refraction of plane wave incident on a negative crystal like calcite-Nicol prism. Analysis of polarized light by quarter wave plate **Lasers, Fiber Optics and Holography:** Spontaneous stimulated emission-laser principle population inversion-Einstein coefficients-Types of lasers, He-Ne and Ruby lasers and the application of lasers. Optical fiber types, rays and modes, step and graded index fibers and their structure fiber materials, principles of fiber communication (quantitative treatment only) Basic principles of Holography Application of Hologram.

#### **UNIT-5**

##### **Electricity, Magnetism and Electronics**

**Electrostatics:** Gauss law and its applications, electric field due to an infinite conducting sheet of charge, uniformly charged sphere and charged cylindrical conductors, **Dielectrics:** An atomic view, potential energy of a dipole in an electric field, polarization and charge density, dielectrics and Gauss's law - Relation between D,E and P- Dielectric constant and susceptibility,**Capacitance:** Capacity of concentric spheres and cylindrical condenser, capacity of parallel plate condenser with and without dielectric. Electric energy stored by a charged condenser. **Magnetostatics:** Magnetic shell potential due to magnetic shell-field due magnetic shell –equivalent of electric circuit and magnetic shell-application of field due to magnetic shell-hysteresis loop.

**Electromagnetic induction:** Faraday's law-Lenz's law-expression for induced emf electromotive force-time varying magnetic fields **Varying and alternating currents:** CR circuits,LR circuits, growth and decay of currents, LCR circuit **Semi-conductor devices:** Band theory of solids (qualitative) - Intrinsic and extrinsic semi conductors-continuity equation-P-N junction diode, zener diode, Half wave and full wave rectifiers and filters, ripple factor(quantitative)-PNP and NPN transistors. Current components CB, CE, CC configurations, transistor hybrid parameters - transistor as an amplifier

#### **UNIT - 6**

**Atomic Physics and Molecular Physics:** Spectra of hydrogen, deuterium and alkali atoms spectral terms, doublet fine structure,**Molecular Physics:** Discrete set of electronic energies of molecules, quantisation of vibrational and rotational energies, determination of internuclear distance, pure rotational and rotation vibration spectra.

**Quantum Mechanics:** Photoelectric effect, Ritz combination principle in spectra, stability of an atom, Planck's radiation law, Einstein's explanation of photoelectric effect,

**Wave-particle duality uncertainty principle:** de Broglie's hypothesis for matter waves; the concept of wave and group velocities, evidence for diffraction and interference of 'particles', experimental demonstration of matter waves. Consequence of de Broglie's concepts; quantisation in hydrogen atom; **Nuclear Physics:** Interaction of charged particles and neutrons with matter, working of nuclear detectors, G-M counter,

**Solid-state Physics:** Crystalline nature of matter, crystal systems, Bravais lattices, miller indices diffraction of X-rays, Laue method, powder diffraction method-simple crystal structures (NaCl, CsCl and Diamond)-Types of bonding in crystals, characteristics of crystals with different bondings-lattice energy of ionic crystals